THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 20

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte REIKO TORII

Appeal No. 95-5109
Application No. 08/063,665[1]

ON BRIEF

Before THOMAS, HAIRSTON and CARMICHAEL, Administrative Patent Judges.

HAIRSTON, Administrative Patent Judge.

DECISION ON APPEAL

This is an appeal from the final rejection of claims 1 through 13.

The disclosed invention relates to an apparatus for generating an automatic focus (hereinafter auto-focus)

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[1] Application for patent filed May 20, 1993.

measurement value on the basis of contrast components of a field of a video signal.

In the acknowledged prior art, a conventional circuit (Figure 2) for generating an auto-focus measurement value band-limited a digital video signal input Y with a high-pass filter (HPF) 2 before sending the video signal to an absolute value circuit (ABS) 3 where the video signal was converted into an absolute value signal representative of contrast components of the video signal (specification, page 1). The absolute value signal output from ABS 3 was then sent to a detecting unit 4 which generated an auto-focus measurement value EST via one of various conventional approaches (specification, pages 1 and 2). The "all integration system" approach (Figure 3A), the "horizontal line peak hold system" approach (Figure 3B) and the "vertical peak hold system" approach (Figure 3C) are three of the conventional approaches (specification, pages 2 and 3).

The detecting unit in appellant's disclosed and claimed invention combines the latter two approaches (i.e., the horizontal line peak hold system and the vertical peak hold system) to form an auto-focus measurement value EST. In a

first embodiment (Figure 7), a horizontal line peak hold circuit 4a and a vertical peak hold circuit 4c in the detecting unit 4' are separated by an averaging circuit 4b which provides sequential rolling averages of the maximum value outputs from the horizontal line peak hold circuit 4a (specification, pages 12 and 13). The vertical peak hold circuit 4c generates a maximum value SC on the basis of the rolling average values from the averaging circuit 4b, and the maximum value output SC from vertical peak hold circuit 4c is used as the auto-focus measurement value EST (specification, pages 13 and 14). In a second embodiment (Figure 9), the output from a horizontal line peak hold circuit 4a inputs a combined low-pass filter and vertical peak hold circuit 4d (Figures 9 and 10). The low-pass filter portion 43 of circuit 4d performs low-pass filtering on the output from horizontal line peak hold circuit 4a, and then passes the filtered maximum values to the vertical peak hold portion 44 of circuit 4d (specifi-

cation, pages 15 through 17).

Claim 1 reads on the first embodiment, claim 2 reads on the second embodiment, and claim 3 derives first and second

auto-focus measurement values using the techniques of the first and second embodiments before "determining, in response to a change in both said first and second auto-focus measurement values, that an auto-focus operation should be performed" (specification, pages 21 through 24; Figure 15).

Claim 1 is illustrative of the claimed invention, and it reads as follows:

1. An apparatus for generating an auto-focus measurement value to be used in performing an auto-focus operation on the basis of contrast components of a field of a video signal, comprising:

line peak means for sequentially receiving lines within said field of said video signal and generating respective maximum values of contrast components of said received lines within said field of said video signal;

average means for sequentially averaging said maximum values generated by said line peak means over predetermined groups of said lines within said field of said video signal to form a plurality of average values for said field; and

peak hold means for outputting as said auto-focus measurement value for said field of said video signal a maximum value of said plurality of average values formed by said average means.

The references relied on by the examiner are:

Murashima	4,967,279	Oct. 30, 1990
Kondo et al. (Kondo)	5,093,716	Mar. 3, 1992

Ueda et al. (Ueda)	5,107,337	Apr. 21, 1992
Hiroshi et al. (Hiroshi)[2] (Japanese patent application)	3-132172	May 6, 1991

Claim 3 stands rejected under 35 U.S.C. § 103 as being unpatentable over Kondo.

Claims 1, 2, 6 through 10 and 13 stand rejected under 35 U.S.C. § 103 as being unpatentable over Kondo in view of Murashima.

Claims 11 and 12 stand rejected under 35 U.S.C. § 103 as being unpatentable over Kondo in view of Murashima and Ueda.

Claims 4 and 5 stand rejected under 35 U.S.C. § 103 as being unpatentable over Kondo in view of Hiroshi.

Reference is made to the briefs and the answers for the respective positions of the appellant and the examiner.

OPINION

The obviousness rejections are reversed.

All of the claims on appeal use the horizontal line peak hold system (Figure 3B) and the vertical peak hold system (Figure 3C) simultaneously in conjunction with either an

[2] A copy of the translation of this reference is attached.

averaging means (claims 1 and 3 through 13) or a low-pass filter means (claim 2) to determine an auto-focus measurement value on the basis of contrast components of a field of a video signal.

Konda discloses a digital color video camera (Figure 4) that has an auto-focus detector 21, an auto-exposure detector 22 and an auto-white detector 23. The input video signal 31 is separated into luminance and chrominance signals by separators 32 and 33, respectively. The luminance portion of the video signal travels through a series of filters 35 through 38, a series of selectors 39A through 39D, and a series of coring circuits 40A through 40D before being gated by gates 41A through 41D and switches 42A through 42D into a series of peak detector 43A through 43D. Kondo discloses (column 12, lines 43 through 64) that each of the peak detectors may be a peak detector circuit for detecting the maximum level of a high frequency component of a luminance signal during a video line interval or, in the alternative, a peak detector circuit for detecting the maximum level of a high frequency component of a luminance signal during a vertical field interval. The two different peak detector

circuits are never used together in Kondo. The outputs from the peak detector circuits 43A through 43D are to a series of integrators 45A through 45D. The explanation of the function of the integrators makes clear that one type of peak detector is used in one embodiment and the other type of peak detector is used in another embodiment (column 13, lines 18 through 30). In a later paragraph (column 13, lines 42 through 44), Kondo expressly states that "[t]he foregoing alternative operating modes of peak detector circuit 43A and integrator circuit 45A will best be appreciated by referring to FIG. 10. . . ." (Emphasis added). In another operating mode of the Kondo video camera, Kondo explains (column 19, lines 11 through 21) that:

> For example, the focus detection signals produced by integrator circuits 45A and 45B are used in combination to sense the focus condition during scanning of pixel elements within auto-focus area AE_2, and the focus detection signals produced by integrator circuits 45C and 45D are used as a measure of the focus condition during scanning of pixel elements within the auto-focus area AE_1. By using a pair of focus detection signals, erroneous indications attributable to artifacts or interference in one of the focus detection signals are avoided.

According to appellant (Brief, page 22):

> This demonstrates that the pair of signals contemplated in Kondo must be of the same type, i.e., two integrated values. . . . Therefore, Kondo does not, as the Examiner alleges, disclose using two different auto-focus measurement values to detect a lens focus condition.

We agree. "Applicant's invention, as defined in claim 3, checks an average of the line peak values and a field maximum value signal to determine if both have changed" (Brief, page 23). Appellant correctly concludes (Brief, page 24) that:

> The mere fact that both systems use redundancy by checking two auto-focus values does not make claim 3 obvious. The Examiner's logic that since redundancy is known in the prior art, it is obvious to use two known signals in a redundant manner to produce a result, be it novel or not, is incorrect.

In summary, the obviousness rejection of claim 3 is reversed because the claimed redundant means for producing first and second auto-focus measurement values, and the averaging means are neither taught by nor would have been suggested by the teachings of Kondo.

Turning next to the obviousness rejection of claims 1, 2, 6 through 10 and 13, we have already established supra that Kondo discloses the use of either a peak detector circuit for detecting the maximum level of a high frequency component of a luminance signal during a video line interval or a peak

detector circuit for detecting the maximum level of a high frequency component of a luminance signal during a vertical field interval, and not the claimed simultaneous use of both circuits. With respect to the claimed averaging means (claim 1), we agree with appellant's argument (Brief, page 11) that "Kondo does not disclose such a device."

The secondary reference to Murashima discloses in the Abstract that:

> An automatic focusing circuit in a video camera separates a high frequency component from the video signal obtained in an image sensing circuit 4 for every field. After the separated high frequency component is integrated in an integration circuit 10, the result is converted into a digital value by an A/D converter 11 and is applied to a holding circuit 12 as a focus evaluating value. The holding circuit 12, which comprises first to fifth memories coupled in series, always holds the newest successive five focus evaluating values. The largest focus evaluating value is detected by the maximum value detecting circuit 18 for every field and is applied to a memory 19. The maximum value is compared with the maximum value one field before held in a memory 20 in a comparator

> circuit 21. If the newest maximum value in the memory 19 is decreased, a focusing motor control circuit 22 inverts the rotational direction of the focusing motor 3.

Even if we assume for the sake of argument that it would have been obvious to one of ordinary skill in the art to use the peak hold means of Murashima in Kondo, we are still left with the fact that Kondo does not disclose an averaging means and uses the two claimed means for determining auto-focus measurement values in an alternative manner.

With respect to the claimed low-pass filter between the two means for determining auto-focus measurement values (claim 2), we agree with appellant's arguments (Brief, pages 18 and 19) that such auto-focus apparatus is neither taught by nor would have been suggested by Kondo and Murashima. Thus, the obviousness rejection of claims 1, 2, 6 through 10 and 13 is reversed.

The obviousness rejection of claims 11 and 12 is reversed because the auto-focus region teachings of Ueda (column 3, lines 38 and 39) do not cure the noted shortcomings in the teachings of Kondo and Murashima.

The obviousness rejection of claims 4 and 5 is reversed because even if Hiroshi discloses "a means to improve the performance of an auto-focusing operation by inputting a video signal so that start points of a blanking period and a video image period are set equally to a prescribed level" (Answer, pages 11 and 12), the combined teachings of Kondo and Hiroshi would still not meet the limitations of independent claim 3 and dependent claims 4 and 5.

DECISION

The decision of the examiner rejecting claims 1 through 13 under 35 U.S.C. § 103 is reversed.

REVERSED

JAMES D. THOMAS Administrative Patent Judge	)	
KENNETH W. HAIRSTON Administrative Patent Judge	)	BOARD OF PATENT APPEALS AND INTERFERENCES
JAMES T. CARMICHAEL Administrative Patent Judge	)	

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